The New York Times
nytimes.com

October 24, 2006

Tumor Types May Explain Survival Rates for Cancer

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Correction Appended

African-American women with breast cancer have significantly lower survival rates compared with white or Hispanic women, and a new study suggests that one reason may be a difference in tumor biology between the races.

The lower survival rates are known from previous studies, and different explanations have been offered, including lower socioeconomic status, reduced access to health care, obesity, side effects that lead to lower chemotherapy dosages, and racial bias among health care professionals.

In this study, published online Monday in the December issue of Cancer, researchers examined the disease characteristics and survival of 2,140 women with breast cancer. All the patients had advanced local cancer but no evidence of metastasis, and all had already had breast surgery. Six hundred and eighty-four women had been treated with chemotherapy before the mastectomy, and 1,456 afterward. The average age at diagnosis was 50 for African-Americans, 49 for Caucasians and 47 for Hispanics.

Because the study was limited to patients who were part of closely regulated trials of chemotherapy drugs, they should not have faced a bias in terms of access to care or the kind of treatment they received. All the patients in each of the two groups received the same medical attention. Follow-up treatment was the same for all patients. The women were followed for an average of almost 10 years.

At the start of the study, African-American women were more likely on average than white or Hispanic women to have larger tumors and a higher rate of a particular form of breast cancer that is more difficult to treat, called estrogen receptor negative disease. After statistically adjusting for these differences, the overall 10-year survival rate for black patients who got chemotherapy before surgery was 40 percent, compared with 50 percent for whites. For women who received chemotherapy after surgery, the survival rate was 52 percent for blacks compared with 62 percent for both whites and Hispanics. Survival rate without the cancer having spread to other organs was also worse for African-Americans than for whites or Hispanics, but only

in the group that received chemotherapy after mastectomy. The researchers analyzed the results separately for patients who had chemotherapy before surgery and for those who had it afterward so that the results could be validated using two sets of data. “We conducted the same analysis in two different sets of patients and found the same results,” said Dr. Wendy A. Woodward, the lead author of the study and an assistant professor of radiation oncology at M. D. Anderson Cancer Center in Houston, part of the University of Texas. “This implies more strongly that it’s not a statistical fluke.”

Biological differences may be only one part of the explanation. “We certainly don’t think that tumor biology accounts for all of the difference that we’ve seen,” Dr. Woodward said. “But if it’s even accounting for part of it, we need to investigate that further to do a better job for women at high risk for breast cancer.”

The authors did not suggest any mechanism that would account for their findings, and they noted certain limitations in the study. Even though all patients received the same number of chemotherapy treatments, the doses were not known. The researchers also did not control for socioeconomic status, although Hispanic women, whose income is roughly equal to that of black women in Harris County, Tex., where the study took place, had survival rates equal to or better than white women in the study. Scientists concluded that the best way to study the impact of tumor biology and race on treatment outcome would be randomized trials of breast cancer treatments that considered socioeconomic status and other factors.

Dr. Woodward cautioned that results based on averages do not apply to individuals. “ ‘African-American women’ is a very heterogeneous group,” she said. “This study doesn’t imply that all black women are going to have a bad outcome. But if there is some commonality here that needs more attention and deserves more research, then it should get it.”

Correction: Oct. 26, 2006

An article in Science Times on Tuesday about a new study suggesting that differences in tumor biology may help account for the lower breast-cancer survival rate of African-American women, compared with other racial groups, gave an incomplete affiliation for the lead author, Dr. Wendy A. Woodward. She is an assistant professor of radiation oncology at M. D. Anderson Cancer Center in Houston. (The center is part of the University of Texas.)